done in every case in which there is any justification for an examination of the chest, many more early cases will be detected and our therapeutic results correspondingly improved.

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SIDNEY J. SHIPMAN, M.D. (490 Post Street, San Francisco).—In pointing out the chief differences between the concept of tuberculosis diagnosis and therapy of fifteen years ago and the concept of today, Doctor Trimble has rendered a distinct service. The wider use of tuberculin in the late 'teens and early adult life is undoubtedly justified at present, since it is becoming increasingly valuable, due to the diminishing incidence of tuberculous infection. As Doctor Trimble says, positive reactions deserve x-ray examinations for follow-up.

Trimble has also done well to emphasize the important points of bronchial tuberculosis, a common complication of pulmonary tuberculosis which has been unrecognized too often in the past. Fortunately, bronchial tuberculosis often manifests itself by certain physical signs and x-ray changes which can be recognized without special investigation. One must be on the alert for localized wheezing, areas of partial atelectasis, and the like.

Regarding the duration of compression by pneumothorax there may be some disagreement. Trimble states that two and one-half years is the minimum. Some other workers in this field prefer to be guided by the general condition of the patient at the time pneumothorax is abandoned, and by the extent of the lesion before pneumothorax was instituted, as well as by the type of work the patient intends to follow. In short, there are many factors which influence one in maintaining or discontinuing compression. I am doubtful about the advisability of making any hard-and-fast rule with regard to this point.

Doctor Trimble also remarks, apropos of pneumolysis, that it is "a procedure without great risk." The truth of this statement depends, of course, upon the operator. Unless one is very conservative, it is a procedure with, rather than without, great risk; for, when unwisely done, the resultant pleural effusions, thickened pleurae, and other complications bring about greater loss of function than would be suffered by the use of a well-chosen thoracoplasty.

Regarding thoracoplasty, Doctor Trimble is a little too conservative in the use of his statistics. Far better results are now obtained than are reflected in the one-third, one-third, one-third groups which he mentions, and it is likely that the results can be still further improved.

In the use of pneumoperitoneum, Doctor Trimble has been a pioneer, and too great credit cannot be given him for his excellent work in this field. He has impressed upon us the fact that a certain group of bilateral, apparently hopeless cases can be sufficiently improved by pneumoperitoneum so that they can stand other forms of therapy, and ultimately recover. This is no mean contribution to the therapy of pulmonary tuberculosis, and deserves much wider acceptance at the hands of those treating tuberculous patients than it has so far enjoyed.

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CHESLEY BUSH, M.D. (Arroyo Sanatorium, Livermore).—After all is said and done, the first defense in the widespread battle against tuberculosis is the medical profession. For this reason, every attempt should be made to bring tuberculosis to the attention of all physicians as frequently as possible. The possibility of tuberculosis should be ever in mind, and its presence eliminated as a routine.

Doctor Trimble brings out and emphasizes the remarkable change which has taken place in the field of tuberculosis. As infection with the tubercle bacillus diminishes, the importance of the tuberculin test increases as a diagnostic help. Improvement of the x-ray and the fluoroscopic screens enhances their importance. There was a time—not so long ago in the memory of many of us—when the finding of râles at an apex was considered early diagnosis. We know now the condition is usually the late manifestation of earlier trouble in the lung parenchyma below the clavicle. We go out now to find tuberculosis before symptoms are suspected, and before physical signs appear.

At the period in which we were seeking râles at an apex, we were treating tuberculosis as a problem of an individual. Now we are treating it as a problem of the family. The finding of one case in a family demands examination of the entire group. It is often difficult for the private physician to avoid the suggestion of commercialism in sending for the entire family, but he can use the assistance of a public health nurse to accomplish this if he appreciates the need. We also treat tuberculosis as a community problem; and more and more this phase is being emphasized.

The development of compression therapy and the forward progress of chest surgery have been astounding. Formerly the treatment of tuberculosis attracted the younger medical men very little. Now there is a waiting list of young men desiring to be chest surgeons. There is a tendency to repeat immediately in every clinic the daring performances of skilled surgeons working under the most ideal conditions. Too often this changes the "dynamic" system of approach to the "dynamite" system. There will be less of this, however, as definite indications and limitations are crystallized, due to longer experience, in chest surgery.

Let us not forget the emphasis made in this paper on bed rest and education. We must still regard tuberculosis as a general disease with focal manifestations; and bed rest is fundamental at the beginning. When an interne asks, "Why is nothing being done for this patient?" when the patient is in bed with good nursing care, we wonder if the pendulum has not swung to the full limit of its surgical arc. We find it necessary to instruct the interne to change his question, "Why is nothing being done, in addition?"

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H. G. TRIMBLE and B. H. WARDRIP (closing).—We wish to thank the discussants for emphasizing and extending many of the points in the original paper.

It has been our observation that when two or more chest men of experience collaborate on the problem of any one individual patient, there is usually very little difference of opinion as to the proper method of approach, and which, if any, of the many procedures above outlined are to be used in the individual instance.

This means, of course, that as these procedures develop, each finds its true place, and definite therapeutic indications exist for its proper use.

GASTRIC ULCER: INDICATIONS FOR MEDICAL AND SURGICAL TREATMENT*

By WILLIAM C. BOECK, M.D.
Los Angeles

DISCUSSION *by Fred H. Kruse, M.D., San Francisco; William P. Kroger, M.D., Los Angeles; Philip Corr, M.D., Riverside.*

AS the subject signifies, there are two methods of treating gastric ulcer, and for each there are definite indications. Our viewpoint on this question has gradually changed since 1909 from one which considered that all gastric ulcers should be treated surgically to that of today, which accords medical treatment more justifiable consideration.

TYPES OF GASTRIC ULCER

We speak of various types of gastric ulcer based, for the most part, upon clinical symptoms. They are: (1) acute perforating; (2) obstructing; (3) hemorrhagic; and (4) simple chronic perforating varieties. The first three are complications of the simple gastric ulcer, and will be discussed briefly because there is little disagreement as to the type of treatment indicated.

* Read before the General Medicine Section of the California Medical Association at the sixty-sixth annual session, Del Monte, May 2–6, 1937.

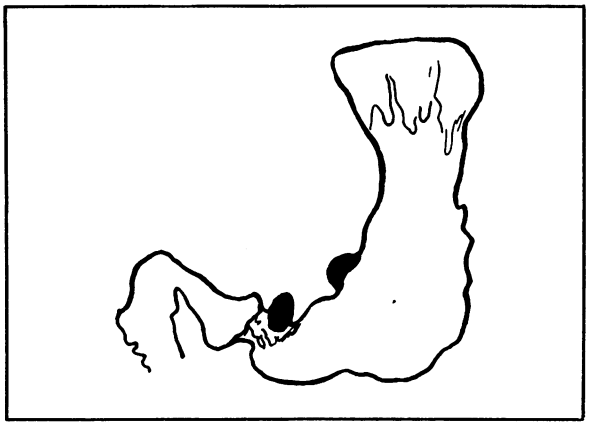

Fig. 1.—Multiple gastric ulcers in prepyloric and fundal areas on the lesser curvature.

ACUTE PERFORATING GASTRIC ULCER

As to acute perforating gastric ulcer, the treatment is always immediate surgical interference, and as to gastric ulcers causing obstruction either at the pylorus or in the fundus, due to an hourglass deformity, I believe a week of medical treatment, supportive in nature, to correct dehydration, tendency to alkalosis, etc., is indicated. If the obstruction still persists at the end of this time, then it is most likely due to cicatrization, and not spasm or edema, and surgery is indicated.

Next, what should be the treatment of hemorrhagic gastric ulcers? I believe it is generally agreed by both surgeons and internists that the treatment here is medical from the outset. Medical treatment may elect to starve these patients for forty-eight hours, as has been the usual custom, or, what I believe is better, to begin feeding them a soft bland diet at once after the method reported from Copenhagen by Muelengracht.[1]

In these cases, transfusions constitute an important factor in medical management. We must not be afraid to give 500 or even 1,000 cubic centimeters of whole blood at one time, if the blood loss has been great, because these larger amounts for transfusion do not precipitate new bleeding while they contribute greatly to the patient's support.

Recurrences of massive hemorrhage may happen within the year, and the ulcer may have healed only to recur, and each time with massive hemorrhage. These instances of recurring hemorrhagic gastric ulcers, I believe, should have such surgical treatment as will, if possible, remove the ulcer. The surgery, however, should not be done until the bleeding stops, as it does in nearly all of these cases.

SIMPLE CHRONIC PERFORATING GASTRIC ULCER

Let us now consider the treatment of the simple chronic perforating gastric ulcer. These ulcers occur posteriorly in over 95 per cent of the cases, along the lesser curvature. They may be small or large, single or double.

The treatment of this type of ulcer has undergone a great change since 1909. During the rapid advance of gastric surgery from 1909 on, the medical profession was persuaded to regard these lesions as "potentially malignant," and, therefore, surgical treatment of gastric ulcer was always indicated. This happened as a result of the surgical opinion expressed by such great surgeons as Mayo-Robson,[2] Moynihan,[3] Mayo,[4] and others, that cancer of the stomach begins as a gastric ulcer; and also as a result of the opinion of prominent pathologists that cancer developed from a previous ulcer in 71 per cent of the cases (Wilson and MacCarty[5]). Other pathological studies indicated that malignant changes were coexistent with inflammatory changes in 68 per cent of the specimens resected for gastric ulcer (MacCarty[6]).

But in the years to follow, this conception became changed, chiefly as a result of the follow-up studies conducted upon patients who had had a gastro-enterostomy performed upon them for gastric ulcer, but had not had the lesion removed. If it were true that malignant changes were present in two-thirds of all gastric ulcers, then these cases should have developed cancer in subsequent years; but Bamberger[7] found only twenty-two cases (2.2 per cent) out of 1,025 such gastro-enterostomized patients; Moynihan,[8] 3 per cent; Eiselberg,[9] 5 per cent; Balfour,[10] 6 per cent; Greenough and Joslin,[11] 1 per cent, and Sherren,[12] no cases of cancer in two hundred patients so operated.

But even this incidence of cancer in these cases is to be expected, partly from errors in diagnosis, provided cancer developed within one or two years after operation, and partly from natural causes if malignancy developed after the first or second year; for Bevan[13] has pointed out that, inasmuch as the frequency of the transition of ulcer of the stomach into cancer varies from 2 to 5 per cent, it is easily conceivable why from 2 to 5 per cent of ulcers should become malignant, since a similar percentage of individuals living to the ages of forty to sixty ordinarily develop cancer of the stomach as a natural course.

Medical opinion is inclined at present to no longer subscribe to the conception, originating twenty years ago, that these ulcers are potentially malignant; but, on the other hand, that at least 95 per cent of them are benign and remain so. MacCarty[6] is more conservative now, and estimates that only 10 to 15 per cent of gastric cancer may have come from gastric ulcer, while Hinton and Trubek[15] go so far as to state, in their recent paper, ". . . once a gastric ulcer, always a gastric ulcer . . ." As a result, the chief indication for prompt surgical treatment of gastric ulcer is eliminated and treatment becomes medical at the outset, provided we can make a reasonable differentiation between malignant ulcerous lesions and benign gastric ulcers.

DIAGNOSIS

Let us examine into the means of diagnosis which we have that help us to decide this issue.

Pathological diagnosis, the most reliable of our methods, is only applicable before surgery whenever there are accessible metastatic glands obtainable for biopsy, but this seldom occurs except in well-developed gastric cancer, when x-ray diagnosis is also competent. Obviously, it is of little help to us preoperatively.

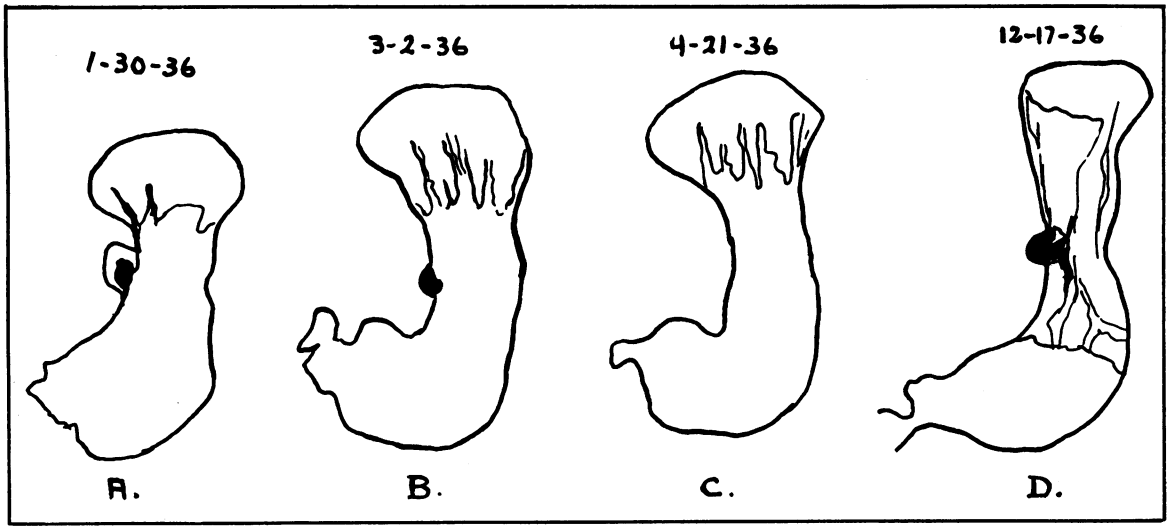

Fig. 2.—Progressive stages in the healing (a, b, c) of a gastric ulcer, and its recurrence (d) one year later; benign lesion.

X-ray examination is, perhaps, our best method of diagnosis before undergoing any operation. X-ray examination, together with pathological and therapeutical studies, has shown that 90 per cent of all ulcers on the lesser curvature proximal to the pylorus are benign ulcers, and 10 per cent of the ulcers in the prepyloric area are benign, while 90 per cent of such ulcerous lesions in this area are apt to be malignant. This is well illustrated by studies of Stewart[16] in England; Holmes and Hampton,[17] and Eusterman and Balfour[14] in the United States.

Gastroscopy is another method employed by some to diagnose the malignant or benign character of these gastric ulcers. Schindler[18] has written considerably about the characteristics of ulcerous gastric lesions, and feels it is possible to differentiate between malignant and benign lesions. I am of the opinion, however, that gastroscopy cannot help in the diagnosis of cases of early malignancy when pathologists, themselves, have difficulty with these lesions.

One case of mine illustrates the difficulty the gastroscopist has in differentiating malignant degeneration of a previously benign gastric ulcer.

REPORT OF CASE

The ulcer occurred in a man, sixty-one years of age. He had suffered from recent repeated hemorrhages during January, 1936, and the bleeding was only stopped after five transfusions. A large perforating ulcer, containing an air bubble, was present on the lesser curvature above the angle of the stomach. The patient had an achlorhydria. On medical management, this ulcer was almost healed in eight weeks, and had disappeared in twelve weeks. During the next eleven months the patient gained sixty pounds in weight and felt fine until the middle of December, 1936, when ulcer symptoms recurred, along with slight hemoptysis. X-ray showed a recurring gastric ulcer in the same location as before. A gastroscopic examination was performed by a trained gastroscopist, and malignant changes were reported. Operation was decided upon, and the lesion was excised. Pathological examination of serial sections failed, however, to reveal any evidence of malignancy, but only inflammatory changes. Much more reliable, after all, was the factor of location for 90 per cent of all such lesions in this location, are benign, and in this case a therapeutical test proved it once, and pathological examination, the second time.

Peritoneoscopy, another method of diagnosis, is not apt to be very useful in differentiating a malignant from a benign gastric ulcerous lesion unless metastasis occurs. Also, the size of an ulcerous lesion is not a good criterion upon which to decide its character (Alvarez and MacCarty[19]), because larger ulcers may be benign and small ones malignant. Likewise, our laboratory tests are of no help in deciding whether a gastric ulcer is malignant or benign, because the findings are common to both lesions. And while it is usually true that benign gastric ulcers give a longer history of trouble than malignant ulcerous lesions, yet the history is not a reliable criterion of diagnosis. The symptomatology also is not a reliable criterion of diagnosis because, in many cases, while it is suggestive of simple ulcer, it may also suggest malignancy on account of the symptoms having become progressively worse.

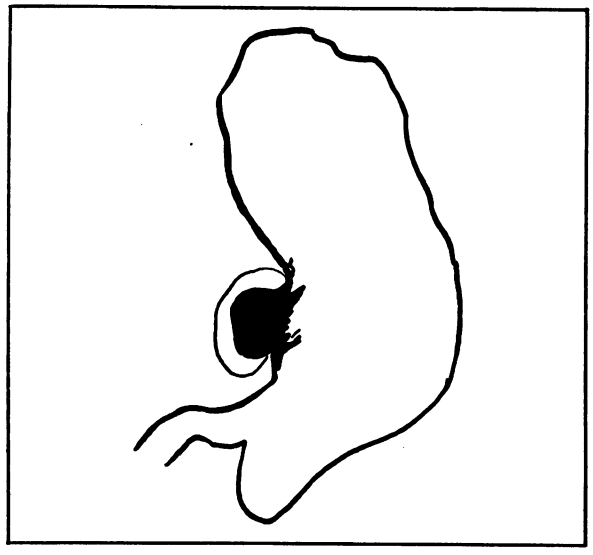

Fig. 3.—Large benign gastric ulcer; perforating and with air bubble.

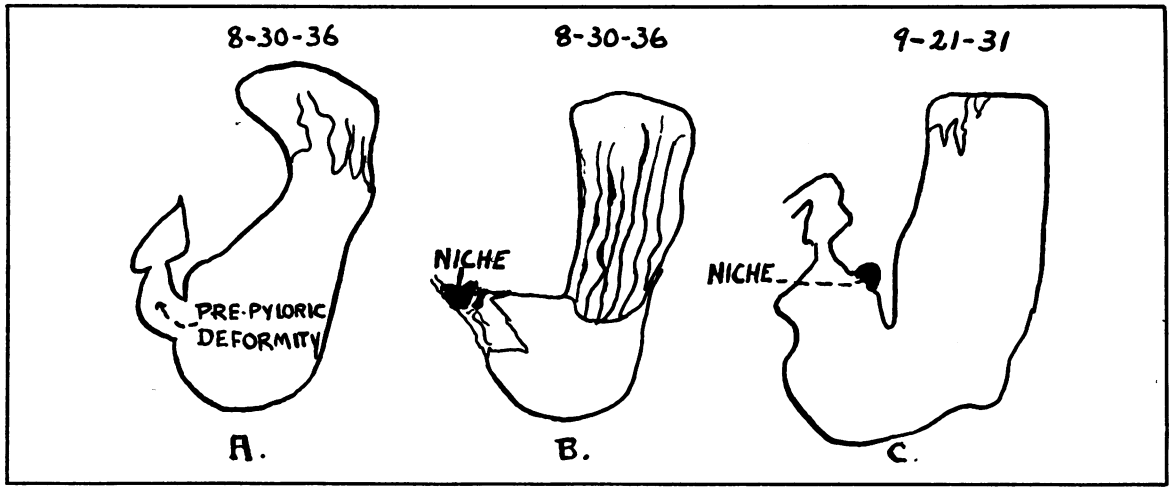

Fig. 4.—(a) Prepyloric spasm from malignant gastric ulcer. (b) Shows the niche, and (c) shows the prepyloric ulcer five years before.

PRESUMPTIVE DIAGNOSIS

We may conclude that before operation our methods of diagnosis—namely, laboratory, x-ray, gastroscopy, history, physical examination, and symptomatology—do not enable us to be certain whether the chronic gastric ulcerous lesion is benign or malignant. Of these methods, x-ray is probably the most important, since it determines the location; and then come the history, symptomatology, and gastroscopy as valuable aids to diagnosis. At best, however, the examination can only result in a presumptive diagnosis; and we are helpless except in one particular, *i. e.*, the "time factor."

TIME FACTOR

This time factor is most deserving of more consideration as a criterion of differentiation of malignant from benign ulcerous gastric lesions, for we have seen, from surgical follow-up studies, that were we to do nothing at all to the lesion, probably 95 to 98 per cent of them would prove to be benign, and 2 to 5 per cent malignant. Studies also show that when a given lesion is probably malignant, although it looks like a benign lesion, the symptoms and the lesion do not completely disappear with medical management. In other words, we must be willing to wait long enough for evidence of healing which indicates a lesion is benign, or failure to heal which indicates the lesion is probably malignant; and this evidence is usually obtainable in two to eight weeks.

SCHEME OF MEDICAL MANAGEMENT

In applying this time-factor criterion to the treatment of these gastric ulcers, some definite scheme of medical management is indicated at the outset, and it should embody the following principles:

1. All chronic gastric ulcers, regardless of situation, size, achlorhydria, melena, and history should have the benefit of medical treatment. This has been advocated by Jordan,[20] Lahey,[21] and Scott.[22]

2. Benign lesions will give evidence of healing by:

(*a*) Improvement or loss of symptoms within first or second week.

(*b*) Cessation of bleeding within second to third week.

(*c*) Diminution in size of ulcer crater by x-ray examination within second to fourth week.

(*d*) Continuous decrease or disappearance of ulcer crater within third to eighth week.

(*e*) Failure of symptoms and ulcer to disappear indicates probable malignancy.

I have seen fit in most cases in my own practice to conduct medical management for as long as eight weeks while looking for evidence of healing. Although this evidence of healing may occur within three weeks, it sometimes takes longer, so that one is often justified to wait, as advised by Jordan and Lahey and Scott, before asking for surgical intervention. Even when surgery is accomplished, the resected lesion may prove to be benign since old callous ulcers may resist healing, yet the patient has been given a fair chance on medical management.

One should exercise utmost vigilance in the case of prepyloric lesions, since the prepyloric area is the home of most malignant lesions. One may want to advise surgical intervention as early as the end of three weeks in those cases showing little or no healing, but often the same or more deformity of the stomach at the end of this time.

REPORT OF CASE

As an example, let me cite the case of a man thirty-five years of age, who had had medical management for an alleged duodenal ulcer over a period of four years, but with only transient periods of relief. My x-ray examination did not substantiate the diagnosis of a duodenal ulcer, but instead a prepyloric gastric ulcerous lesion was found associated with marked gastrospasm. Because of the failure of medical treatment, and because of the prepyloric location of the ulcer, surgery was advised and a resection was made. The gastric ulcer was 2½ by 4 centimeters, shallow, and was diagnosed carcinoma by two pathologists. No glandular metastasis was noted. No duodenal ulcer was present. The earlier x-rays, four years before, indicated a small gastric ulcer in this area, which was overlooked.

3. It is essential that, during this time of medical management, frequent x-ray examinations be made to observe if any decrease occurs in the size of the lesion. The criticism to be made of the conduct of most cases is that this important method of check-

ing progress is not made use of sufficiently. There should be an examination every two or three weeks, as a minimum, in the beginning of medical treatment, and subsequently at intervals of three to six months after healing, in order to learn of any recurrence.

4. Healing with recurrence is no criterion of the benign lesion becoming malignant; when ulcers recur, medical management at first is again indicated, and only when failure to heal has been demonstrated, is surgery advisable.

5. Medical management on an ambulatory ulcer diet (with prohibition of alcohol and smoking, if possible) should continue as long as the patient lives, to prevent any recurrence of the gastric ulcer in the same, or some other location.

6. The criteria of complete healing should be:

(*a*) Disappearance of symptoms.

(*b*) Disappearance of melena under strict control.

(*c*) Disappearance of ulcer niche by x-ray examination.

(*d*) Disappearance of ulcer by gastroscopic examination.

I believe gastroscopy has an important place as a check to the final disappearance of the lesion, since it answers the criticism of those who claim that an ulcer may have disappeared in the x-ray and still be present because its crater was filled with fibrin, mucus, or food matter, and was, therefore, not demonstrable. I do not feel, however, that gastroscopy need be routinely employed for this purpose, because subsequent x-ray examinations would prove whether or not the lesion was present.

IN CONCLUSION

In summary, may I state that surgical treatment is indicated immediately in cases of (1) acute perforated gastric ulcer, and (2) obstruction due to cicatricial pyloric or fundal stenosis. Furthermore, that medical treatment is indicated in all cases of (*a*) massive hemorrhage from gastric ulcer, and (*b*) in all cases of simple chronic perforating types of gastric ulcer for at least eight weeks, after which, if healing does not occur then, such appropriate surgical methods of treatment are indicated as will remove the lesion, and by as simple procedure as possible.

By employing the factor of time as a criterion, we shall give these ulcerous gastric lesions uniform consideration and arrive at a diagnosis of probable malignancy or benign ulcer by the most satisfactory method we possess at present. In this way, I believe our mortality from surgery (average 5 per cent) will still be less, since surgery will be done on fewer but deserving cases. We will have more satisfactory follow-up studies to help determine the incidence of cure from the removal of malignant ulcerous lesions. Anyone who has read the report of Cole [23] on "The Pathological Yardstick" cannot help being impressed with this necessity. I believe that the opinion of more than one pathologist is always desirable when malignancy is diagnosed.

May I conclude with a quotation from Lahey,[24] a foremost surgical authority:

> One not infrequently hears and reads that the way to improve our results of cancer of the stomach is to submit all gastric lesions to radical surgery, in order that a carcinoma may not be overlooked, and in order that malignant degeneration of gastric ulcer does not occur. This is, I believe, a wrong attitude, and were it employed on a large scale, the operative mortality would at least approximate, if not surpass, the percentage of gastric carcinomas which are missed under the plan of preoperative segregation by frequent roentgen-ray observation while under a short period of hospital observation under medical management.

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DISCUSSION

FRED H. KRUSE, M.D. (384 Post Street, San Francisco).—While I must praise Doctor Boeck's general conclusions, I would be inclined to make his opening paragraph, in reference to the treatment of gastric ulcer, much stronger in favor of persistent medical management by saying that our viewpoint today holds the problem essentially a medical one, and that only intractability, or other more limited considerations, render surgical treatment justifiable.

Acute perforation is one of these undoubtedly; and the prepyloric ulcer that is not readily controlled, or that does not indicate healing, is too dangerously located to encourage prolonged temporizing.

On the other hand, I would be inclined to give the apparent obstructive lesions, even an hour-glass deformity, more time under medical treatment, a part of which might be directed toward mechanical relief, by regularly emptying the stomach by tube, in an endeavor to ascertain whether the viscus might not regain compensation. Emery has questioned actual cicatrization in most of these lesions, and emphasizes the need of more prolonged treatment in relieving the real underlying factors of spasm, edema, and fibrosis.

I quite agree with Doctor Boeck's statements about hemorrhage in gastric ulcer, especially recurrent, massive hemorrhage. In this condition it is well to remember that an enormous toxic destruction of protein takes place after such bleeding with an elevation of the blood urea and nonprotein nitrogen, which produces great dehydration and a state approaching uremia; and unless this condition is corrected leads to death from uremia. Especially, for that reason alone, surgery is best deferred, if medical control is at all possible.

In respect to the simple, chronic perforating gastric ulcer, intractability or some one of the complications that render it nonamenable to medical treatment have been my chief reasons for resorting to surgery, and not so much the fear of malignancy. I am glad to hear that Doctor Boeck does not feel that the size of the crater is an arbitrary indicator of the probability of malignant degeneration.

In considering the doubtful benign or malignant gastric lesion, I highly commend the procedure recommended by Doctor Boeck under time factor, only I have called it the therapeutic test. In applying this test of treatment to such a lesion, to be satisfactory we should insist upon absolute relief of symptoms in a few days, and conclusive evidence of recession or disappearance by x-ray in several weeks.

What about the degree of acidity?

I still believe that a proper gastric analysis tells us a lot about the doubtful lesion.

True, in 10 to 15 per cent of gastric cancers have a normal or high acidity, and 10 to 15 per cent of peptic ulcers have subnormal or anacidity.

In doubtful cases, instead of the usual Ewald meal, it may be best to try a carefully controlled gastric analysis, as described by Bloomfield and recently by Cranston Holman: injecting histamin subcutaneously, followed by continuous aspiration for thirty minutes, measuring the volume of secretion and height of acidity in three ten-minute periods.

It has been found that practically all persons with gastric and duodenal ulcer have high acidity and large secretory volume. No single finding is infallible, but a lesion in the stomach associated with a low or absent gastric acidity is one that makes operative intervention advisable —if there has been an accurate gastric analysis.

Obviously, a small percentage of gastric lesions defy all the means now available for the correct diagnosis, including actual exploration, and thus proper treatment remains in doubt.

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WILLIAM P. KROGER, M.D. (1930 Wilshire Boulevard, Los Angeles).—The last decade has brought the surgeon and internist more and more in accord in their thoughts regarding the treatment of all peptic ulcers. The days are not far gone when the surgeon viewed with alarm the delay of the internist in bringing these patients to operation, and the internist viewed with alarm the apparent overalacrity with which the surgeon operated upon such patients.

Time and experience have softened such dogmatism, and we now agree upon essential points.

In the main we have no points of difference with Doctor Boeck's program. We have felt, for some years, the need of a greater recognition and practice of a regimen such as has been outlined, and it is only by following such a program that much needless surgery will be eliminated.

The plan is simple, and is backed by facts. As Doctor Boeck has shown, when 90 per cent of gastric ulcers found proximal to the pylorus are benign, it is imposing no great danger upon a patient to delay eight weeks for a therapeutic test which will differentiate between a malignant or a benign lesion. We heartily endorse this procedure, and hope that it will be generally accepted and followed.

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PHILIP CORR, M.D. (Mission Inn Rotunda, Riverside). The subject under discussion is that of gastric and not duodenal ulcer.

This distinction is important because of the different problems involved. When considering duodenal ulcer there is no concern as to whether or not the ulcer is carcinomatous. With a gastric ulcer one must always give the matter of cancer consideration, no matter on what side of the argument one is on concerning whether or not gastric ulcers become malignant. The chief concern, from what Doctor Boeck has told us, is not whether the ulcer will become malignant, but whether it is malignant now.

In spite of my respect for the time-honored history and physical examination, one must concede first importance to expertly conducted fluoroscopic and x-ray examinations in the differential diagnosis of peptic ulcer. Second place should go to the gastric analysis. Gastroscopy promises to give some help in expert hands. Only occasionally should it be needed to help solve the problem of malignancy vs. gastric ulcer. As yet we hesitate to rely on it completely. If peritoneoscopy must be resorted to in order to make the diagnosis, it seems to me that it would be safer to settle the question more definitely by more inclusive surgical procedures. It is hardly necessary to repeat that with all the available evidence possible in certain cases of gastric lesions it is impossible for even the most competent to determine the matter of malignancy preoperatively.

In general, medical measures for the uncomplicated cases of gastric ulcer should be relied upon, but where there still remains a reasonable doubt concerning malignancy, surgery should be advised. After all, surgery often is a great help in the treatment of nonmalignant gastric ulcer.

In the simple gastric ulcer cases where the coöperation of the patient cannot be obtained, surgery will be considered. Perhaps it will be considered too quickly by ambitious surgeons and unresourceful physicians. One should recall that, while success may follow their dramatic efforts, recurrent ulcers or gastrojejunal ulcers may require even more careful medical management than would have been needed preoperatively.

If Hippocrates were faced with the modern problems of gastric ulcer, so competently presented in this paper, he would derive further satisfaction in contemplating his philosophical first aphorism that, "Life is short, and the Art long; the occasion fleeting; experience fallacious and judgment difficult. The physician must not only be prepared to do what is right himself, but also make the patient, the attendants, and the externals coöperate."